

CLAIMS

1. Process for the production of synthesis gas by catalytic steam reforming of a hydrocarbon containing feed-
stock in parallel in an autothermal steam reformer and in
5 one or more steam reformers in series, the heat for the steam reforming reactions in the one or more steam reformers being provided by indirect heat exchange with the combined effluents from the one or more steam reformers with
10 the autothermal steam reformer, and wherein carbon monoxide containing gas is added to the feedstock prior to the steam reforming in the autothermal steam reformer and/or prior to the steam reforming in the one or more steam reformers, the carbon monoxide containing gas having a molar ratio of hy-
15 drogen to carbon of less than 4.5 and being added in an amount resulting in a product stream having a molar ratio of hydrogen to carbon monoxide of between about 1.8 and 2.3.
- 20 2. Process according to claim 1, wherein the one or more steam reformers are adiabatic steam reformers and/or heat exchange steam reformers.
- 25 3. Process according to claim 2, wherein the feedstock to the one or more adiabatic steam reformers is preheated by indirect heat exchange with the combined effluents from the one or more steam reformers and the autothermal steam reformer.

4. Process according to claim 2, wherein the heat for the heat exchange reformer is provided by indirect heat exchange with the combined effluents from the one or more steam reformers and the autothermal steam reformer.
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5. Process according to claim 1, wherein catalyst in at least one of the steam reformers is in form of pellets or catalysed hardware.
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6. Process according to claim 5, wherein the catalysed hardware is arranged on structured metallic or ceramic elements or on monoliths.
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7. Process according to claim 1, wherein the active catalytic material in a first of the steam reformers is nickel and the active material in a last of the steam reformers is a noble metal or a mixture of noble metals.
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8. Process according to claim 3, wherein the preheating is combined with catalytic steam reforming between at least one of the adiabatic steam reformers.
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9. Process according to claim 1, wherein an oxidant to the autothermal steam reformer contains at least 90% oxygen by volume.
10. Process according to claim 1,
wherein the carbon monoxide containing gas is tail gas from a Fischer-Tropsch process.